



ENVIRONMENTAL ASSESSMENT
MANAGEMENT OF HANFORD SITE
NON-DEFENSE PRODUCTION REACTOR
SPENT NUCLEAR FUEL
HANFORD SITE, RICHLAND, WASHINGTON
U.S. DEPARTMENT OF ENERGY

**Finding of No Significant Impact
(FONSI)
MARCH 1997**

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-1185, to assess environmental impacts associated with the management of non-defense production reactor spent nuclear fuel (SNF) at the Hanford Site, and associated activities to support this work. The inventory of material is stored in various facilities throughout DOE's Hanford Site, near the City of Richland, Washington. Alternatives considered in the review process included: the No Action alternative; the preferred alternative to consolidate the Hanford Site's inventory of non-defense production reactor SNF in above-ground and vault storage in the 200 Area; and alternatives addressing above-ground dry cask storage in the 400 Area and vault storage in the 200 Area.

Based on the analysis in the EA, DOE has determined that the proposed action is not a major federal action significantly affecting the quality of the human environment within the meaning of the *National Environmental Policy Act of 1969* (NEPA), 42 U.S.C. 4321, et seq. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required.

ADDRESSES AND FURTHER INFORMATION

Single copies of the EA and further information about the proposed action are available from:

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PURPOSE AND NEED: DOE needs to enhance safe and cost-effective management of the non-defense production reactor spent nuclear fuel (SNF) at the Hanford Site. This inventory is stored in various facilities throughout the Hanford Site.

BACKGROUND: The Hanford Site currently stores about 80 percent (approximately 2,132 metric tons heavy metal [MTHM⁽¹⁾]) of the current DOE complex-wide SNF inventory (approximately 2,650 MTHM). The Hanford Site SNF inventory is comprised of defense production reactor (N Reactor and Single-Pass Reactor) SNF at the 105-K Basins; and non-defense production reactor SNF including the Shippingport Naval Reactor Pressurized Water Reactor Core II SNF at T Plant, Fast Flux Test Facility (FFTF) SNF and Neutron Radiography Facility TRIGA® SNF at the 400 Area, Light Water Reactor SNF at the 324 Building, and miscellaneous special-case commercial and experimental SNF at the Plutonium Finishing Plant (PFP), 200 Area Low-Level Burial Grounds and 300 Area laboratories.

The non-defense production reactor SNF inventory is approximately 29 MTHM, roughly 1.4 percent by weight of the total inventory of SNF stored at the Hanford Site. The non-defense production reactor SNF curie content (approximately 15,000,000 curies) represents approximately 20 percent of the total Hanford Site's SNF curie content (approximately 73,000,000 curies including defense production reactor SNF).

Environmental, safety and health vulnerabilities associated with existing non-defense production reactor SNF storage facilities have been identified. These include the age of storage facilities and design life of storage containers. DOE has determined that additional activities are required to consolidate non-defense production reactor SNF management activities at the Hanford Site, including cost-effective and safe interim storage, prior to final disposition, to enable deactivation of facilities where the SNF is now stored. Cost-effectiveness would be realized through: reduced operational costs associated with passive rather than active storage systems (ventilation, cooling, etc.); removal of SNF from areas undergoing deactivation as part of the Hanford Site remediation effort; and eliminating the need to duplicate future transloading facilities at the 200 and 400 Areas. Radiologically- and industrially-safe storage would be enhanced through: removal from aging facilities requiring substantial upgrades to continue safe storage; utilization of passive rather than active storage systems for SNF; and removal of SNF from some storage containers which have a limited remaining design life.

PROPOSED ACTION: The proposed action would consolidate the Hanford Site's non-defense production reactor SNF in a cost-effective, radiologically- and industrially-safe and passive storage condition, pending final disposition.

The proposed action involves recovery/retrieval of the various categories of non-defense production reactor SNF, appropriately packaging the SNF (as necessary), and transport (via rail/truck) from the respective current locations to the Canister Storage Building (CSB) Complex (in the 200 East Area) or the PFP (in the 200 West Area). The proposed action would include any/all modifications to storage facilities to accommodate the SNF.

The proposed action includes several facets: once at the CSB Complex, the SNF may be repackaged, as appropriate, and placed into interim storage. Interim storage may be placement in the CSB itself or in casks on new outdoor concrete storage pads within the CSB Complex (i.e., the 200 Area Interim Storage Area [ISA]). The proposed action also includes any necessary modifications at the CSB Complex to provide transloading capability, safeguards and security, and cask maintenance, weather protection (e.g., casks may be placed into portable metal storage containers to minimize contact with rain and snow,) and surveillance.

The proposed action includes continuing shipping cask surveillance and maintenance operations, and appropriate weather protection, in the 400 Area (with appropriate safeguards and security measures), and sodium-bonded FFTF SNF transport to the Idaho National Engineering and Environmental Laboratory.

Also under the proposed action, PFP SNF (including slightly irradiated FFTF SNF that will be transferred to PFP) would continue to be stored at PFP, instead of the CSB, due to safeguards and security requirements. Maintenance and upgrade of PFP storage would be completed as necessary to satisfy SNF storage criteria.

Final facility decontamination and decommissioning is not within the scope of the proposed action.

ALTERNATIVES CONSIDERED: The EA discussed two other alternatives as well as the No Action Alternative.

No-Action Alternative. This alternative would result in most of the non-defense production reactor SNF remaining in its existing storage configuration. The FFTF SNF would continue to be offloaded from the FFTF and placed into Interim Storage Casks for interim storage in the 400 Area ISA. The SNF in the 324 Building would be packaged and transferred for storage at the 400 Area ISA.

This alternative would result in continued surveillance and maintenance of SNF storage systems at the 400 Area and T Plant. This alternative does not address vulnerabilities associated with aging storage facilities or storage containers which may exceed their design life in their current configuration. This alternative continues storage with active systems rather than use of passive systems. This alternative would limit flexibility in transferring the sodium-bonded FFTF SNF (i.e., the material only could be shipped from the 400 Area).

The No-Action Alternative is not consistent with the efforts to deactivate facilities at the Hanford Site and reduce the cost of surveillance and maintenance at facilities consistent with the site remediation effort.

Other Alternatives. Two alternatives which were considered were: (1) consolidation in a single location: dry cask storage at the existing 400 Area ISA; and (2) consolidation in a single location: CSB vault storage. Both alternatives would require additional personnel and cost to perform the actions and result in additional worker exposure.

ENVIRONMENTAL IMPACTS: Routine conduct of the proposed activity would not result in any significant increase in emissions. Before beginning the proposed activity, appropriate procedures and administrative controls would be in place to maintain exposure to workers and other onsite personnel to within requirements established by DOE Orders and as low as reasonably achievable principles. The exposure received by onsite personnel is not expected to be greater than doses currently received from routine Hanford Site operations. Potential radiological doses to the public from routine operations would be extremely small and are not expected to result in any health effects. The risks to workers from chemical exposures, noxious vapors, burns, and other common industrial hazards are expected to be low, and would be minimized by training and the use of appropriate personal protective equipment.

The proposed action would result in the generation of minor amounts of hazardous materials (e.g., solvents). These materials will be removed or stabilized, and would be managed and reused, recycled, or disposed of in accordance with applicable federal and state regulations.

The proposed action is not expected to impact the climate, flora/fauna and habitat, air quality, geology, hydrology and/or water quality, land use, or the population. Biological and Cultural Resources Reviews support these expectations.

The proposed action would not release any particulate matter, thermal releases, or gaseous discharges in significant amounts. Noise levels would be comparable to existing conditions at the Hanford Site.

Socioeconomic Impacts Existing Hanford workers will perform necessary construction and operation activities. Therefore no socioeconomic impacts are expected.

Cumulative Impacts The proposed action is not expected to contribute substantially to the overall cumulative impacts from operations on the Hanford Site. Standard Operating Procedures will provide sufficient personnel protection such that exposure to radiological and chemical materials will be kept below DOE allowable limits. Routine operations associated with the proposed action are not expected to significantly increase the amount of radioactivity released from total Hanford operations.

The wastes generated from the activities would not add substantially to waste generation rates at the Hanford Site and would be stored or disposed in existing facilities.

Environmental Justice Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that Federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs and activities on minority and low-income populations. This proposed action would occur within the Hanford Site boundaries. As discussed in the EA, no health or socioeconomic effects are expected.

Impacts From Postulated Accidents In addition to environmental impacts that were postulated from routine operations, the EA discussed a range of reasonably foreseeable accident scenarios that could lead to environmental impacts. These events include both high consequence with low

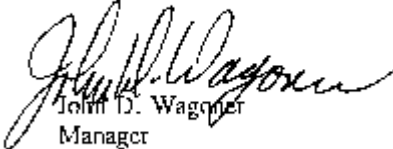
probability and low consequence with high probability scenarios for the onsite (100 meters, 0.062 miles) worker and the maximally exposed individual offsite (i.e., approximately 7 kilometers or 4.5 miles).

The Maximum Reasonably Foreseeable Accident is postulated to be a severe cask impact followed by a fire at a new dry storage (small vault or cask) facility. The release associated with this accident was based on a hypothetical scenario of six irradiated FFTF fuel assemblies being subjected to a severe impact, causing fuel pins to rupture. The potential exposure to the onsite worker is 120 rem. The calculated offsite consequence is 0.05 rem. No latent cancer fatalities due to radiation from this incredible accident would be expected.

Potential toxicological consequences of an accidental release of nonradiological materials also were evaluated. Analyses concluded that the postulated release of these materials would not pose a threat to onsite workers or offsite individuals or population.

DETERMINATION: Based on the analysis in the EA, I conclude that the proposed management of non-defense production reactor SNF at the Hanford Site does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an EIS for the proposed action is not required.

Issued at Richland, Washington, this 28th day of March, 1997.


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1. MTHM = metric tons of heavy metal. One MTHM equals approximately 2,200 pounds.